

secondary over eastern Maryland. Both the main sections moved rapidly northeastward during the night, and on the morning of the 20th, the Virginia one was over the Island of Nantucket (29.18 inches). By evening it had passed over Newfoundland, and in the meantime the northern section had disappeared.

As stated above, no strong winds occurred, except along the Maine coast. There were, however, some very heavy snows over portions of New York and New England.

Storm of March 24-27.—On the morning of March 24 a well-defined low extended in the form of a narrow trough from eastern New Mexico to southern Minnesota, with a center of disturbance at each end, the northern one disappearing to the northward of Lake Superior during the succeeding night. On the morning of March 25 the southern low was central over Oklahoma (Altus, 29.14 inches), and SE. storm warnings had been ordered on the previous evening along the Gulf coast from Bay St. Louis, Miss., to Cedar Keys, Fla. Orders were issued at 3 p. m., March 25, to change these warnings to SW. at sunset, and SW. warnings were also ordered on the Atlantic coast from Jacksonville, Fla., to Charleston, S. C. At 8 p. m. the center of the storm was over SE. Iowa (Keokuk, 29.02 inches), and advisory warnings for strong winds and rain were sent to open ports on Lake Michigan. By the evening of March 26 the storm center was northeast of Lake Superior, and on the morning of March 28, it was north of Newfoundland with undiminished intensity.

The warnings issued on the 24th and 25th for the Gulf coast and the Jacksonville-Charleston section of the Atlantic coast were verified, except on the Atlantic coast, where only fresh winds occurred.

Still another severe storm appeared during the 29th north of British Columbia and developed to the southeastward. This storm will be discussed in the MONTHLY WEATHER REVIEW for April, 1920. The SE. storm warnings ordered at 3 p. m., March 25, on the New England coast were ordered as a matter of precaution, as a disturbance was moving northward over the western Atlantic Ocean, only a short distance from the coast, and its intensity was problematical. No strong winds followed, and the warnings were unnecessary.

WARNINGS FROM OTHER DISTRICTS.

Chicago, Ill., forecast district.—The month was marked by the movement in rapid succession of a remarkable series of low-pressure areas across this forecast district. The barometer was abnormally low in most of the storm areas. As the disturbances advanced they were attended by general rains and high winds and even gales.

The storm which crossed the district during the 3d and 4th was the only one that was followed by a well-marked cold wave, the highs not following the lows in the usual order with marked changes in temperature.

The disturbance which advanced eastward across the Rockies on the 2d and reached Kansas on the 3d was one rather of the winter type, and by the evening of the 4th it had crossed the Upper Lake Region. Snow was general on its northern and western sides, with strong winds and falling temperature. Warnings to live-stock interests were issued on the morning of March 2 to South Dakota, Nebraska, and Wyoming points. Additional warnings were sent to Nebraska on the morning of the 3d and to Kansas and west Missouri. The messages

contained advices of snow, cold weather, and strong northwest winds. Cold-wave warnings were also issued on the 3d to the Central Plains States, and they were extended on the morning of the 4th to Illinois and a portion of Wisconsin. These warnings, as well as the advices to stock interests, were fully verified, and it is believed that transportation and stock were protected from the severe conditions which followed. The cold was persistent for several days following the passage of this storm, temperatures being particularly low in the Northwest. A reading of -32° was reported at Billings, Mont.

Beginning on the 10th, the weather conditions became especially active. The storm which passed across the district on the 10th and 11th covered a wide area, but the barometer readings were not especially low. However, a few days later, in the storm which crossed over the more northerly States on the 14th to 16th, the pressure was very low, 28.56 inches being reported at Moorhead, Minn.

While the pressure in the following two storms was also low, it was not until the 28th that the reading again fell below 29 inches. On the morning of that day the barometer at Sioux City, Iowa, registered 28.96 inches. In the southeast quadrant of this storm, far from the center, in northern Illinois, three distinct tornadoes developed, which caused damage amounting to \$3,150,000, 225 houses were wrecked, and 28 lives were lost, and 300 injured.

There were seven storms in all which crossed the district, and each one was attended by more or less severe gales. Generally speaking, it was probably the windiest month in this forecast district for a long period of years. Warnings of the gales were given in advance of these storms to the vessel interests on Lake Michigan maintaining winter navigation.

Warnings of snow and colder, with strong northwest winds, were sent to the live-stock interests on the morning of the 11th to points in Kansas and west Missouri, and on the morning of the 17th to Wyoming and west Nebraska. The conditions following these warnings were not as severe as those of the storm during the early days of the month, but nevertheless the warnings were justified.—H. J. Coz.

New Orleans Forecast District.—Storm or small craft warnings were issued for the Texas coast on the 3d, 11th, 14th, 24th, and 27th, and for the Louisiana coast on the 4th and 24th. These warnings were generally justified. No general storm occurred without warnings.

A cold wave overspread the district during the 3d, 4th, and 5th, for which timely warnings were issued. No cold wave of any importance occurred without warning.

Five weather warnings were issued as occasion required.—I. M. Cline.

Denver Forecast District.—The month was characterized in the Denver Forecast District by abnormally low temperature and windy weather. An unusually large number of deep storms from the Pacific coast crossed the district, causing frequent serious delays in telegraphic service and some interruption to railroad traffic in the mountain districts. Some winter grains were uncovered in eastern Colorado by strong winds. As is usual in storms that cross the mountains, an excess of precipitation occurred on the western slope and a deficiency in the districts east of the mountains. Record-breaking cold weather prevailed in eastern Colorado in the fore part of the month, an anticyclone of marked intensity spreading